

REMARKS**1. Rejection of claims 1-18 under 35 U.S.C. §112, 2nd paragraph.**

Claims 1-18 stand rejected under 35 USC 112, 2nd paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It has been noted that the structural formula in independent claims 1, 15, and 17 is defective because it includes a carbon atom having 5 valences instead of the required 4.

Applicants and the Undersigned appreciate the PTO's identification of this unintentional error. Correction has been made as indicated in the foregoing amendments. Reconsideration and removal of the rejection is respectfully requested.

2. Objection to the Specification.

The disclosure has been objected to because of an improper structural formula on pages 3 and 5. The structural formula is incorrect because it includes a carbon atom having 5 valences.

Applicants and the Undersigned appreciate the PTO's identification of this unintentional error. Correction has been made as indicated in the foregoing amendment to the Specification. Reconsideration and removal of the rejection is respectfully requested.

3. Rejection of claims 1-18 under 35 U.S.C. §102 as anticipated by Yamamoto et al., U.S. 5,187,229, hereafter "Yamamoto" or the "229 reference".

The basis of the PTO's rejection is understood as follows:

Yamamoto discloses a product obtained by reacting an amine compound (A) and an acrylic copolymer (B) containing cyclocarbonate group as a side chain at a functional group number of 0.7 to 3.0 per molecule, column 3, lines 4-6 and 8-9 and column 49, lines 23-35. The reaction of cyclocarbonate group with amine is also shown at column 7, scheme (3). The acrylic copolymer containing cyclocarbonate group in Yamamoto's invention is the same as applicants' claimed acrylic backbone polymer (b) comprising one or more cyclic carbonate functional groups (bi). The amine compound (A) having at least one amine group is applicants' claimed (ci) grafting material, column 5, lines 24-68. Yamamoto discloses a product obtained by reacting an amine compound with the cyclocarbonate functional group for producing a hydroxyl functional urethanized acrylic graft polymer for the present claim 1.

(Office Action of 4/4/03, page 3.)

Applicants appreciate the detailed basis of rejection but must respectfully disagree. In particular, the invention of Applicants' amended claim 1 is novel with respect to the '229 reference.

Applicants' independent claim 1 has been amended to show that Applicants' invention requires the use of grafting materials (c) having one amine group and particular grafting moieties (cii). Support for the amendments to claim 1 may be found in Applicants' Specification in paragraphs [00040]-[00042] and [00069]-[00071]. No new matter has been added with these amendments. Entry of the amendments is respectfully requested.

To anticipate a claim, a single source must contain all of the elements of the claim. *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 231 U.S.P.Q. 81, 90 (Fed. Cir. 1986). This standard is not met by the '229 reference.

First, the '229 reference requires the use of di- or polyamines when B is a cyclocarbonate functional acrylic polymer. As indicated in column 4, lines 45-53, the '229 reference requires that the reaction product of A and B have amine functionality. That is, the presence of the amine group is required for adsorption onto the surface of the pigment. It is interesting to note that many, if not most, of the amine components A discussed in column 5 of the '229 reference are di- or polyamines.

As shown in column 7 of the '229 reference, the reaction of an amine group with an epoxy group or an acetoacetate group results in a reaction product having a secondary or tertiary amine group. In contrast, the reaction of a cyclocarbonate containing acrylic with a monoamine results in a urethane group, i.e., a secondary or tertiary carbamate group. Those of skill in the art will appreciate that the presence of the carbonyl carbon changes the reactivity of the N and H atoms such that a secondary or tertiary amine is not equivalent to a secondary or tertiary carbamate group.

If A is a monoamine, the reaction product of Yamamoto's component A and a cyclocarbonate functional acrylic B lacks any of the amine groups which Yamamoto teaches are necessary for adsorption of the claimed pigment dispersing agents on the surface of the pigment. Thus, the '229 reference does not disclose the reaction of cyclocarbonate functional acrylics with monoamine components A to make urethanized acrylic graft polymers having hydroxyl groups beta to the secondary or tertiary carbamate or urethane group.

Second, none of the particular grafting moieties (cii) required in Applicants' amended claim 1 are disclosed in the '229 patent. There must be no difference between the claimed invention and the disclosure, as viewed by a person of ordinary skill in the field of the invention. *Scripps Clinic & Res. Found. v. Genentech Inc.*, 18 U.S.P.Q.2d 1001 (Fed. Cir. 1991). Because Applicants' required grafting moieties (cii) are not disclosed in the '229 reference, there can be no anticipation.

Applicants' claimed invention is thus not disclosed by the cited reference.

Reconsideration and removal of the rejection is respectfully requested.

4. Rejection of claims 1-18 under 35 U.S.C. §103(a) as obvious over Yamamoto et al., U.S. 5,187,229, hereafter "Yamamoto" or the "'229 reference".

The PTO's rejection of claims 1-18 under 35 U.S.C. §103(a) incorporates the PTO's comments with respect to the rejection under 35 U.S.C. §102(b). In addition, the PTO's obviousness rejection is premised on the following additional remarks:

It would have been obvious to one of ordinary skill in the art to consider that a polyester oligomer having functional group in Yamamoto invention is a conventional alternative to an additional ethylenically unsaturated monomer having the same functional group for obtaining the same expectation of adequate results because the component (C) in Yamamoto is not reactive with the cyclocarbonate functional group under free radical polymerization conditions. Also, it would have been obvious to one of ordinary skill in the art to select an acrylic copolymer having a cyclocarbonate functional group in Yamamoto's invention for obtaining the applicants' claims, because the epoxy groups, acetoacetoxy group and cyclocarbonate group react with the amine group within the same expectation of adequate results in Yamamoto's invention.

(Office Action of 4/4/03, page 5)

Applicants and the Undersigned greatly appreciate the detailed basis of rejection but must respectfully disagree and submit that amended independent claim 1 is nonobvious over the '229 reference.

A preliminary matter, Applicants do not agree that 'epoxy groups, acetoacetoxy group and cyclocarbonate group react with the amine group within the same expectation of adequate results in Yamamoto's invention'. As discussed above in Section 3, the reaction of an amine group with an epoxy group or an acetoacetate group results in a Yamamoto reaction product having a secondary or tertiary amine group. In contrast, the reaction of a cyclocarbonate

containing acrylic with a monoamine results in a reaction product having a urethane group, i.e., a secondary or tertiary carbamate group. One of skill in the art will appreciate that in Yamamoto's invention, the cyclocarbonate functional acrylics B must be reacted with a di- or polyamine A. If the cyclocarbonate functional acrylics B of the '229 reference are reacted with a monoamine A, they must also be reacted with a component C polyester. *See col. 4, lines 45-59.*

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *MPEP 2143*

The '229 reference fails to satisfy this standard. In particular, the reference fails to provide any motivation to use a monoamine and a cyclic carbonate functional acrylic to make a beta-hydroxy functional urethanized acrylic graft copolymer having a particular grafting moiety, in particular grafting moieties which lack any amine groups which are reactive with cyclic carbonate functional groups.

As discussed above, the import of the '229 reference is to require the use of di- or polyamine components A with the cyclocarbonate functional acrylics B. Lines 45-59 of column 4 of the '229 reference teach one of skill in the art that the lack of amine groups in the resulting reaction product will provide an inoperative embodiment. As a result, one of skill in the art would not be lead to use monoamines with cyclocarbonate functional acrylic resins. If proposed modifications would render the prior art invention being modified unsatisfactorily for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gorden*, 221 UPSQ 1125 (Fed. Cir. 1984); *MPEP 2143.01*

Moreover, there is no suggestion to use amine components A having the particular grafting moieties (cii) required in Applicants' amended claim 1. To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 180 USPQ 580 (CCPA 1974); *MPEP 1243.03* All words in a claim must be considered in judging the patentability of that claim against the prior art. *In re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970)

As noted earlier, many, if not most, of the amine components A disclosed in the '229 reference include di- and polyamines. As a result, those of skill in the art are lead away from the recognition of the importance of the particular grafting moieties (cii) required in Applicants' amended independent claim 1 which lack any such internal amine groups. Even if the teachings of a primary reference could be modified to arrive at the claimed subject matter, the modification is not obvious unless the prior art also suggests the *desirability* of such a modification. *In re Laskowski*, 10 U.S.P.Q.2d 1397, 1398 (Fed Cir. 1989).

Taken as a whole, it is respectfully submitted that the '229 reference teaches away from the particular grafting moieties (cii) now required by Applicants' amended independent claim 1. A reference which leads one of ordinary skill in the art away from the claimed invention cannot render it unpatentably obvious. *Dow Chem. Co. v. American Cyanamid Co.* 2 U.S.P.Q.2d 1350 (Fed. Cir. 1987).

Accordingly, it is respectfully submitted that the invention of amended independent claim 1 is nonobvious over the '229 reference because it fails to provide a prima facie case of obviousness as required by MPEP 2143. Those claims dependent upon amended independent claim 1 are likewise believed to be patentable in as much as they incorporate all of the limitations of amended claim 1. Reconsideration and removal of the rejection is respectfully requested.

CONCLUSION

Applicant(s) respectfully submit that the Application and pending claims are patentable in view of the foregoing amendments and/or remarks. A Notice of Allowance is respectfully requested. As always, the Examiner is encouraged to contact the Undersigned by telephone if direct conversation would be helpful.

Respectfully Submitted,



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